

# Laboratory Power Supplies

## SG Series

### Programmable Precision DC Power Supply 5kW - 150kW // 40V - 600V



**High Power Density:** Up to 15kW in a 3U / 30kW in a 6U chassis

**Wide Voltage Range:** 0-40V up to 0-600V, in increments of 5kW from 5 to 30kW

**Fast Load Transient Response:** Protection from undesired voltage excursions

**Low Ripple and Noise:** Suitable for the most sensitive applications

**Parallelable up to 150kW:** Expandable as your requirement grows

**Modular Design:** Upgradeable for the ultimate in investment protection

**Sequencing:** Program custom waveforms

**Easy-to-read Fluorescent Display:** SGI supports English, French, German, Italian, Spanish, Chinese, Japanese, and Korean languages

**16-bit Resolution:** Optional IEEE-488.2 + RS-232C or Ethernet provides precise control

**Ethernet Control:** LXI Class C compliant communication with integrated web server

**Direct Relay Control:** Control output and sense isolation relays, along with polarity relays. (Ethernet Option Only)

**Hardware Trigger:** Ethernet Option Only

The SG series represents the next generation of high power programmable DC power supplies. Designed for exceptional load transient response, low noise and the highest power density in the industry. The industry leading power density is enhanced by a stylish front air intake allowing supplies to be stacked without any required clearance between units. At the heart of the SG series is a 5kW power module. Depending on the output voltage, one to six modules can be configured in a single chassis to deliver 5kW to 30kW of power. Combinations of these chassis can then be easily paralleled to achieve power levels up to 150kW. Paralleled units operate like one single supply providing total system current. Available in two control versions, the SGA has basic analog controls, while the SGI provides intelligent control features.

#### Input:

|                          |   |
|--------------------------|---|
| Nominal Voltage          | 208/220 VAC<br>(operating range 187-242 VAC)  |
| 3 phase, 3 wire + ground | 380/400 VAC<br>(operating range 342 - 440 VAC)  |
|                          | 440/480 VAC<br>(operating range 396 - 528 VAC)  |
| Frequency                | 47 - 63Hz   |
| Power Factor             | >0.9 typical at 208/220 VAC input<br>>0.78 typical at 380/400 VAC input<br>>0.69 typical at 440/480 VAC input |

#### Environmental:

|                       |  |
|-----------------------|--|
| Operating Temperature | 0 to 50° C   |
| Storage Temperature   | -25° C to 65° C  |
| Humidity Range        | Relative humidity up to 95% non-condensing, 0° C - 50° C   |
| Altitude              | Operating full power available up to 5,000 ft. (~1,500 m), derate 10% of full power for every 1,000 feet higher; non-operating to 40,000 ft. (~12,000 m) |
| Cooling               | Front and side air inlet, rear exhaust. Units may be stacked without spacing   |
| Approvals             | Certified to UL/CSA 61010 and IEC/EN 61010-1, CE Compliant, Semi-F47 Compliant   |

#### Physical:

|            |  |
|------------|--|
| Dimensions | Width: 19.00" (48.3cm),<br>Depth 25.0" (63.5cm)<br>Height: 5-15kW units:<br>3U - 5.25" rack mount (13.34cm)<br>20-30kW units:<br>6U - 10.5" rack mount (26.67cm) |
| Weight     | 3U < 80 lbs. (36kg)<br>6U < 160 lbs. (73kg)  |

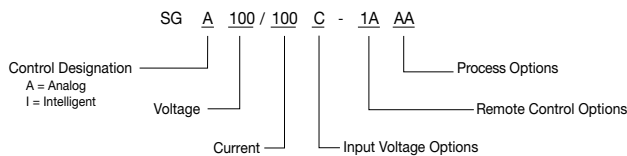
#### Output:

|                               |  |
|-------------------------------|--|
| Ripple & Noise (Voltage Mode) | See Output: Voltage & Current Ranges Chart Above.<br>Ripple and noise specified at full load, nominal AC input                     |
| Ripple (Current Mode)         | <+/- 0.04% of full scale rms current   |
| DC Voltage Slew Rate          | 100 ms 5-95% of full scale typical (Contact factory for model specific slew rates)   |
| DC Current Slew Rate          | 45A / ms typical   |
| Line Regulation               | (± 10% of nominal AC input, constant load)<br>Voltage Mode:<br>+/- 0.01% of full scale<br>Current Mode:<br>+/- 0.05% of full scale |
| Load Regulation               | (no load to full load, nominal AC input)<br>Voltage Mode:<br>+/- 0.02% of full scale<br>Current Mode:<br>+/- 0.1% of full scale    |
| Efficiency                    | 87% typical at nominal line and max load   |
| Stability                     | ±0.05% of set point after 8 hrs. warm-up at fixed line, load and temperature   |
| Temperature Coefficient       | 0.02%/ C of maximum output voltage rating for voltage set point<br>0.03%/ C of maximum output current rating for current set point |

| Output: Voltage and Current Ranges |         |       |       |       |       |       |                        |                       |
|------------------------------------|---------|-------|-------|-------|-------|-------|------------------------|-----------------------|
|                                    | 3U      |       |       | 6U    |       |       | Ripple & Noise         |                       |
| Power                              | 5 kW    | 10 kW | 15 kW | 20 kW | 25 kW | 30 kW | rms<br>(20 Hz-300 kHz) | p-p<br>(20 Hz-20 MHz) |
| Voltage                            | Current |       |       |       |       |       |                        |                       |
| 40                                 | 125     | 250   | 375   | 500*  | 625*  | 750*  | 20 mV                  | 75 mV                 |
| 60                                 | 83      | 167   | 250   | 333   | 417   | 500   | 20 mV                  | 75 mV                 |
| 80                                 | 63      | 125   | 188   | 250   | 313   | 375   | 20 mV                  | 100 mV                |
| 100                                | 50      | 100   | 150   | 200   | 250   | 300   | 20 mV                  | 100 mV                |
| 160                                | 31      | 63    | 94    | 125   | 156   | 188   | 25 mV                  | 150 mV                |
| 200                                | 25      | 50    | 75    | 100   | 125   | 150   | 25 mV                  | 175 mV                |
| 250                                | 20      | 40    | 60    | 80    | 100   | 120   | 30 mV                  | 200 mV                |
| 330                                | 15      | 30    | 45    | 61    | 76    | 91    | 30 mV                  | 200 mV                |
| 400                                | 12      | 25    | 38    | 50    | 63    | 75    | 30 mV                  | 300 mV                |
| 600                                | 8       | 17    | 25    | 33    | 42    | 50    | 60 mV                  | 350 mV                |

| SGI / SGA Comparison Chart     |          |                                       |
|--------------------------------|----------|---------------------------------------|
| Feature                        | SGA      | SGI                                   |
| Modular Design                 | x        | x                                     |
| Fast Load Transient            | x        | x                                     |
| Parallelable                   | x        | x                                     |
| Analog & Digital Summing       | Optional | x                                     |
| Direct Front Panel V/I Control | x        | x                                     |
| 3½ Digit LED Readout           | x        |                                       |
| Graphics Display               |          | x                                     |
| Sequencing                     |          | x                                     |
| Save/Recall Setups             |          | x                                     |
| System Power Readouts          |          | x                                     |
| Constant Power Mode            |          | x                                     |
| IEEE-488.2/RS-232C             | Optional | RS-232C Std<br>IEEE-488.2<br>Optional |
| LXI Compliant Ethernet         | Optional | Optional                              |

### SGI / SGA Model Number Description:



### Options and Accessories:

Control Options: A: Analog  
I: Intelligent

Input Options: C: Input Voltage 187 / 242VAC, 3 Phase  
D: Input Voltage 342 / 440VAC, 3 Phase  
E: Input Voltage 396 / 528VAC, 3 Phase

Remote Control Options: 0A: No Option  
1A: IEEE-488.2 + RS-232C  
1C: Ethernet + RS-232C  
1D: Isolated Analog Control  
1E: Shaft Locks (SGA series only)

Process Options: AA: No option  
AB: Certificate of Calibration (includes Test Data)

Accessories: 890-453-03: Paralleling Cable (for up to 5 units, requires one cable per unit placed in parallel)

K550212-01: 3U Rack Slides (for 5kW, 10kW and 15kW models)  
K550213-01: 6U Rack Slides (for 20kW, 25kW and 30kW models)

Contact factory for other combinations

| Programming & Read-back Specifications |  |                                    |   |                                    |  |
|--|--|------------------------------------|---|------------------------------------|--|
|  | Programming  |                                    | Read-Back / Monitoring  |                                    |  |
|  | Accuracy   | Resolution                         | Accuracy  | Resolution                         |  |
| Front panel Display                    | SGA: +/- (0.5%fs + 1 digit)<br>SGI, Voltage: +/- 0.1% of full scale<br>SGI, Current: +/- 0.4% of full scale            | SGA: 3.5 digits<br>SGI: 4.0 digits | SGA: +/- (0.5%fs + 1 digit)<br>SGI, Voltage: +/- 0.1% of full scale<br>SGI, Current: +/- 0.4% of full scale | SGA: 3.5 digits<br>SGI: 4.0 digits | Knob control & Display read-back   |
| Remote Analog Interface                | Voltage: +/-0.25% of full scale for 0-5 V range, +/-0.5% of full scale for 0-10 V range<br>Current: 0.8% of full scale | NA                                 | +/-1.0% of full scale (0 - 10V)   | NA                                 | 25-pin D-sub connector (0~5 V or 0~10 V)   |
| Remote Digital Interface               | Voltage: +/- 0.1% of full scale, Current: +/- 0.4% of full scale   | +/-0.002% of full scale            | Voltage: +/- 0.15% of full scale, Current: +/- 0.4% of full scale   | +/-0.002% of full scale            | RS-232C (Standard on SGI), Optional IEEE-488.2 and Optional LXI Compliant 10/100 base-T Ethernet (see Options) |
| OVP                                    | +/- 1% of full scale   | +/-0.002% of full scale            |   |                                    | Programming range: 5-110% Configured from front panel, remote analog or via optional digital inputs            |
| User I/O                               | Disconnect & Polarity-reversal relay control ( Only available with Ethernet Option )                                   |                                    |   |                                    | Digital 10-pin Molex type connector  |